WORK PLAN

REVISION NO. 2

ORMET CORPORATION
ENDANGERMENT ASSESSMENT
HANNIBAL, OHIO

AUGUST 20, 199

DONOHUE & ASSOCIATES, INC.

Contract No. 68-W8-0093
Work Assignment No. 23-5LIZ
Donohue Project No. 20032

K-4

WORK PLAN

REVISION NO. 2

ORMET CORPORATION
ENDANGERMENT ASSESSMENT
HANNIBAL, OHIO

AUGUST 20, 1991

Prepared for:

U.S. Environmental Protection Agency
Emergency and Remedial Response Branch
Region V
230 South Dearborn Street
Chicago, Illinois 60604

Donohue ENGINEERS
ARCHITECTS
SCIENTISTS

August 20, 1991

Ms. Rhonda E. McBride (5HS-11)
Remedial Project Manager
U.S. Environmental Protection Agency
Region V
230 South Dearborn Street
Chicago, IL 60604

Re: EPA Region V ARCS Contract No. 68-W8-0093
Work Assignment No. 23-5L1Z
Donohue Project No. 20032

Submittal of Revised Work Plan and Contract Pricing Proposal
for Ormet Corporation Endangerment Assessment

Dear Ms. McBride:

Enclosed please find two copies of the Work Plan and Contract Pricing Proposal (Revision No. 2) for the Ormet Corporation Endangerment Assessment work assignment. The Work Plan was revised per Statement of Work Revision No. 1 dated July 18, 1991 and attached to Work Assignment Form No. 6. Copies have been forwarded to Project Officer Patricia Vogtman and Contracting Officer Brigitte Manzke under separate cover.

Please note that the duration of this project has now been extended to 27 months (previously 18 months) per your request. Twenty (20) LOE has been added to Task 4 of the Work Plan for incorporating into the Human Health Evaluation Report comments provided by U.S. EPA on July 3, 1991 (Task 2). Thirty-six (36) LOE has been budgeted for providing pre- and post-ROD technical assistance under the direction of the U.S. EPA RPM (Task 5). Additionally, 78 LOE has been requested for project administration/management during the added duration and for the project closeout (Task 6).

the following is a summary of changes made in the Work Plan:

Page	Section	Description
1	1.0	Paragraph 2 Revised
9	2.2	Paragraph 4 Added
10	2.4	Subtask 1.3 Added
11	2.4	Subtask 2.7.4 Added
14	2.4	Subtask 5.1 Revised

■ 111 North Canal Street, Suite 305, Chicago, Illinois 60606 ■ 312.902.7100 ■ Fax 312.902.7099

Donohue ENGINEERS ARCHITECTS SCIENTISTS

15	2.4	Subtask 6.1 Revised
15	3.0	Revised
15	4.0	Paragraph 1 Revised
21	Schedule	Revised

Please call me if you have any questions or comments.

Sincerely,

DONOHUE & ASSOCIATES, INC.

Mansour Ghiasi

Mansour Ghiasi, P.E.
Site Manager

MG:ds

Enc: Contract Pricing Proposal (2 copies)

cc: EPA
Patricia Vogtman, Project Officer (1 copy)
Brigitte Manzke, Contracting Officer (1 copy)

DONOHUE
Roman Gau
Tom Dalton
Stephanie Reith
Mike Crosser
Work Assignment Files
PMO Files

ICAIR/LIFE SYSTEMS
Jo Ann Duchene (2 copies, Contract Pricing Proposal--
appropriate labor and cost sheets only)

A/O/L/GI6

CONTRACT PRICING PROPOSAL COVER SHEET

1. SOLICITATION/CONTRACT/MODIFICATION NO. W.A. # 23-5LIZ

FORM APPROVED OMB NO. 3090-0116

NOTE: This form is used in contract actions if submission of cost or pricing data is required. *(See FAR 15.804-6(b)(1))*

2. NAME AND ADDRESS OF OFFEROR *(Include ZIP Code)*

DONOHUE & ASSOCIATES, INC.
111 N. CANAL STREET
SUITE 305
CHICAGO, IL 60606

3A. NAME AND TITLE OF OFFEROR'S POINT OF CONTACT

Mansour Ghiasi, Site Manager

3B. TELEPHONE NO

(312) 902-71

4. TYPE OF CONTRACT ACTION *(Check)*

	A. NEW CONTRACT		D. LETTER CONTRACT
	B. CHANGE ORDER		E. UNPRICED ORDER
X	C. PRICE REVISION/ REDETERMINATION		F. OTHER *(Specify)*

5. TYPE OF CONTRACT *(Check)*

☐ FFP ☐ CPFF ☐ CPIF ☒ CPAF
☐ FPI ☐ OTHER *(Specify)*

6. PROPOSED COST *(A+B=C)*

A. COST	B. PROFIT/FEE	C. TOTAL
$ 149,413	$ 7,107	$ 156,520

7. PLACE(S) AND PERIOD(S) OF PERFORMANCE

Ormet Corporation Endangerment Assessment Hannibal, Ohio January 1990 thru March 19

8. List and reference the identification, quantity and total price proposed for each contract line item. A line item cost breakdown supporting this recap is r quired unless otherwise specified by the Contracting Officer. *(Continue on reverse, and then on plain paper, if necessary. Use same headings.)*

A. LINE ITEM NO.	B. IDENTIFICATION	C. QUANTITY	D. TOTAL PRICE	E. P
	REF: Enclosed Contract Pricing Proposal; Detailed Labor Workhour Distribution; Detailed Cost Estimate Distribution Table			

9. PROVIDE NAME, ADDRESS, AND TELEPHONE NUMBER FOR THE FOLLOWING *(If available)*

A. CONTRACT ADMINISTRATION OFFICE

B. AUDIT OFFICE

10. WILL YOU REQUIRE THE USE OF ANY GOVERNMENT PROPERTY IN THE PERFORMANCE OF THIS WORK? *(If "Yes," identify)*

Purchased for Government Account

☒ YES ☐ NO

11A. DO YOU REQUIRE GOVERNMENT CONTRACT FINANCING TO PERFORM THIS PROPOSED CONTRACT? *(If "Yes," complete Item 11B)*

☐ YES ☒ NO

11B. TYPE OF FINANCING *(J or*

☐ ADVANCE PAYMENTS ☐ PROGR PAYME
☐ GUARANTEED LOANS

12. HAVE YOU BEEN AWARDED ANY CONTRACTS OR SUBCONTRACTS FOR THE SAME OR SIMILAR ITEMS WITHIN THE PAST 3 YEARS? *(If "Yes," identify item(s), customer(s) and contract number(s))*

☐ YES ☒ NO

13. IS THIS PROPOSAL CONSISTENT WITH YOUR ESTABLISHED EST MATING AND ACCOUNTING PRACTICES AND PROCEDURES ANC FAR PART 31 COST PRINCIPLES? *(If "No," explain)*

☒ YES ☐ NO

14. COST ACCOUNTING STANDARDS BOARD (CASB) DATA *(Public Law 91-379 as amended and FAR PART 30)*

A. WILL THIS CONTRACT ACTION BE SUBJECT TO CASB REGULATIONS? *(If "No," explain in proposal)*

☐ YES ☒ NO

B. HAVE YOU SUBMITTED A CASB DISCLOSURE STATEMENT *(CASB DS-1 or 2)? (If "Yes," specify in proposal the office to which submitted and if determined to be adequate)*

☒ YES ☐ NO

C. HAVE YOU BEEN NOTIFIED THAT YOU ARE OR MAY BE IN NON-COMPLIANCE WITH YOUR DISCLOSURE STATEMENT OR COST ACCOUNTING STANDARDS? *(If "Yes," explain in proposal)*

☐ YES ☒ NO

D. IS ANY ASPECT OF THIS PROPOSAL INCONSISTENT WITH YOUR DISCLOSED PRACTICES OR APPLICABLE COST ACCOUNTING STANDARDS? *(If "Yes," explain in proposal)*

☐ YES ☒ NO

This proposal is submitted in response to the RFP contract, modification, etc. in Item 1 and reflects our best estimates and/or actual costs as of this date.

15. NAME AND TITLE *(Type)*

Roman M. Gau, P.E.
ARCS Project Manager

16. NAME OF FIRM

DONOHUE & ASSOCIATES, INC.

17. SIGNATURE

Roman M Gau

18. DATE OF SUBMISSION

August 16, 1991

PERFORMANCE OF REMEDIAL RESPONSE
ACTIVITIES AT UNCONTROLLED HAZARDOUS
WASTE SITES (ARCS V)

U.S. EPA CONTRACT NO. 68-W8-0093
EPA WORK ASSIGNMENT NO. 23-5LIZ

WORK PLAN
REVISION NO. 2

ORMET CORPORATION
ENDANGERMENT ASSESSMENT
HANNIBAL, OHIO

AUGUST 20, 1991

Prepared by: Mansour Ghiasi Date: 8-19-91
Mansour Ghiasi, P.E.
Site Manager
Donohue & Associates, Inc.

Approved by: Roman M Gau Date: 8-19-91
Roman M. Gau, P.E.
ARCS Project Manager
Donohue & Associates, Inc.

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1.0 INTRODUCTION

This revised Work Plan describes the proposed technical effort and estimated cost to be performed by Donohue & Associates, Inc. (Donohue) for Work Assignment No. 23-5LIZ under Contract No. 68-W8-0093 for the U.S. Environmental Protection Agency (U.S. EPA). The work assignment is titled "Endangerment Assessment for the Ormet Corporation Site." The majority of the work for this project will be carried out by Donohue's team subcontractor, Interdisciplinary Consulting and Information Research, Life Systems, Inc. (ICAIR/Life Systems).

The plan revision is in response to Work Assignment Amendment No. 6 to incorporate into the Final Baseline Risk Assessment Report the additional comments provided by U.S. EPA and to provide technical and administrative support requested by U.S. EPA.

1.1 Site Background

The Ormet site is located between the west bank of the Ohio River and Ohio State Route No. 7, near Hannibal, Ohio, on the northeastern half of a lens-shaped stretch of land approximately 2.5 miles long and about 0.5 miles wide. Several former lagoons and a former pot-liner storage area are located on the northeastern portion of the property.

A primary aluminum production plant is operated at the site. The main plant operation is the conversion of alumina (Al_2O_3) into aluminum utilizing powdered alumina dropped into molten cryolite (Na_3AlF_6). An electric current of approximately 85,000 amperes is then passed from a carbon anode, through the solution, to a cathode lining. The electricity breaks the alumina down into molten aluminum and oxygen.

Analyses of the sludge from the former lagoons indicated elevated concentrations of fluoride, cyanide, and ammonia. Surface sediment samples from one of the lagoons contained high levels of phenolics, cyanide, and polynuclear aromatic hydrocarbons, some of which are documented carcinogens.

Analyses of the groundwater from monitoring wells indicated high concentrations of fluoride, cyanide, and dissolved solids. Analyses of groundwater collected from an interceptor well system, designed to protect the potable and process groundwater sources, indicated high levels of fluoride and cyanide.

A Consent Order between Ormet Corporation, the Ohio Environmental Protection Agency (OEPA), and the U.S. EPA, Region V, was signed in March 1987. Ormet Corporation has been investigating the site for the last several years for the purpose of preparing a Remedial Investigation/Feasibility Study (RI/FS). Additional (Phase II) sampling remains to be completed under the Consent Order.

- The Superfund Exposure Assessment Manual, U.S. EPA, April 1988 (EPA/540/1-88/001).

- The Exposure Factors Handbook, U.S. EPA, July 1989 (EPA/600/8-89/043).

Other U.S. EPA guidance documents, as referenced in the above documents, will be used as appropriate.

The assessment of risks in a baseline public health evaluation is an evaluation which characterizes and quantifies the impact of site contamination upon human populations under the assumption of no remedial action. This assessment is composed of four major analyses:

- Data Evaluation
- Exposure Assessment
- Toxicity Assessment
- Risk Characterization

These analyses are discussed in Sections 2.1.1 to 2.1.4 of this approach. The ecological assessment focuses on analyses of effects on plants and animals on or near the site. This effect is described in Section 2.1.6.

2.1.1 Data Evaluation

Once field investigation activities (i.e., Phase II sampling) are complete, the data evaluation task begins. The task commences with data gathering and ends with a set of data for use in the baseline risk assessment. While there are data evaluation efforts that must be performed by other members of the RI/FS team (i.e., the RP), there are also data evaluation steps that must be performed in the context of the risk assessment. Once monitoring and other site data are received from Ormet (including any descriptive or tabular summaries and mapping of qualified data), the data will be gathered and sorted by medium (if not done by the RP) and reviewed by the risk assessors to:

- Evaluate analytical methods to determine which data are appropriate for use in quantitative risk assessment.

- Evaluate quantitative limits (i.e., sample quantitation limits) with regard to health-based reference concentrations.

- Eliminate chemicals for which there are no positive data.

- Determine data quality with respect to laboratory qualifiers (i.e., codes) to eliminate data points which are unusable for quantitative risk assessment.

- Compare blank data with associated sample results to eliminate non-site contamination.

2.1.3 Toxicity Assessment

The toxicity assessment weighs available evidence for the potential of each contaminant to cause adverse health effects. This assessment also attempts to describe the relationship between the extent of exposure to a contaminant and the increased likelihood or severity of adverse effects.

Each chemical's non-carcinogenic and carcinogenic effects will be described in tabular format. A summary of toxicity values (i.e., reference doses and slope factors) will be prepared for both carcinogens and non-carcinogens. These values will reflect the most up-to-date information available on each contaminant of concern and will use EPA's recommended hierarchy of toxicity information (i.e., EPA's Integrated Risk Information System (IRIS), Health Effects Assessment Summary Tables (HEAST), other EPA values).

2.1.4 Risk Characterization

The final step of the baseline risk assessment characterizes risk. Toxicity and exposure assessments are integrated into a quantitative expression of risk. For non-carcinogens, estimated intakes are compared to appropriate toxicity values (i.e., reference doses) for each contaminant of concern over a specified time period. If the ratio of exposure to toxicity (the hazard quotient or index) exceeds one (1.0), there may be a concern for potential non-cancer effects. At the Ormet site, more than one non-carcinogenic chemical must be addressed. Assessing risks one chemical at a time may underestimate risk associated with simultaneous exposures to several contaminants. To assess non-carcinogenic effects posed by more than one chemical, the hazard index (i.e., summing hazard quotients) approach will be utilized. If the hazard index exceeds unity, there may be concern for potential health effects, even though the hazard quotient for each individual chemical does not exceed unity. Additivity of toxic effects by the same mechanism will be assumed.

For carcinogens, risks are estimated as an incremental probability of an individual developing cancer over a lifetime as a result of exposure to a potential carcinogen. Estimated intakes are multiplied by each chemical's slope factor and summed across populations. Cancer risk estimates will be compared to EPA's recommended target risk range of 10^{-4} to 10^{-7}.

The risk characterization will be completed with a discussion of the numerical risks and an explanation and interpretation of those results. The discussion will be qualified by mentioning major assumptions and uncertainties within the assessment.

2.1.5 Documentation of the Baseline Risk Assessment

The documentation of the baseline risk assessment will be a report which addresses the objectives of the risk assessment process, that is, (1) to determine whether remedial action is warranted, (2) to provide a basis for chemical levels protective of human health, and (3) to provide a basis for comparing

- Observe and qualitatively characterize tree, shrub and herbaceous species numbers and distributions in the wooded carbon runoff area.

- Observe and qualitatively characterize signs of stress (e.g., yellowing leaves or death) in vegetation occurring in the wooded carbon runoff area and other areas of thick carbon material build-up or elevated contaminant levels.

- Observe the upper soil layers in areas of thick carbon material build-up and elevated contaminant levels and estimate the degree of plant material decay. Make the same observations in a similar, uncontaminated area of the site. Take soil moisture into consideration in evaluation of observations.

- Observe the following on site in an area not affected by carbon material build-up or elevated contaminant levels:

  - Tree, shrub and herbaceous species numbers and distributions.
  - Signs of vegetation stress.
  - The degree of plant material decay in the upper soil layers.

  Incorporate this information in evaluation of potential biological stress in contaminated areas.

- Identify and prepare a list of bird species present on site.

- Observe, identify and prepare a list of mammals making tracks, scat and burrowing holes in disposal ponds in the vicinity of the construction material scrap dump, used pot-liner areas and the area downstream of outfall 004 to the Ohio River.

- Perform limited live-trapping for small mammals in the wooded carbon runoff area and one other area of thick carbon material build-up or area of elevated contaminant levels.

- Prepare a summary of sediment toxicity studies for chemicals of potential concern at this site.

- Address surface water and sediment contamination relative to adequate protection of aquatic resources of the Ohio River.

- Evaluate sediment contamination relative to outfall 004 and possible effects of biological resources. Review permit applications, discharge monitoring reports and other pertinent data which the Ohio Environmental Protection Agency may have on the site. Evaluate potential effects on the water area and the area downriver of the location where the outfall discharges to the river.

2.2 Approach for Technical Support

The approach to providing technical support during this work assignment is designed to ensure that the U.S. EPA RPM is afforded expertise in the area of risk assessment throughout the project.

Technical document review will be provided for three RP submittals (which may include sampling technical memoranda, work plans, or other related documents) and a review of the draft FS. The detailed review of the FS will include comments on the technical adequacy and accuracy of cleanup goal calculations and remedial action objectives for both human populations and ecological resources. Also included will be review comments on whether risk assessment issues were addressed during screening and detailed analysis of alternatives. The review of the FS will be performed by a senior ICAIR/Life Systems risk assessor. The review of the other RP submittals will be done by the ICAIR/ Life Systems program manager/principal investigator for the Ormet site.

Attendance at meetings and phone consultations with the RPM are also critical to the success of this project. Therefore, a task has been included for the program manager/principal investigator to attend six such meetings (dates to be determined by the U.S. EPA RPM at her discretion) and provide consultations on an as-needed basis.

As an added task in this revised Work Plan, Donohue will provide technical assistance, as directed by the U.S. EPA RPM, prior, during, and after issuance of the Record of Decision. Thirty-six (36) LOE has been budgeted for this task.

2.3 Management Approach

Because all technical work on this project will be provided by Donohue's team subcontractor, ICAIR/Life Systems, the Donohue site manager will function primarily in an administrative capacity. This will include formal submittal of the work plan and all contract deliverables, cost and schedule control, preparation of monthly progress reports, and liaison with the EPA RPM on administrative matters.

The ICAIR/Life Systems program manager will oversee the technical staff assigned to this project. Donohue has granted the ICAIR/Life Systems manager the authority to coordinate and communicate directly with the EPA RPM on technical matters to ensure that the work is performed in a timely manner and that the correct expertise is used in each task. Donohue will be kept informed of the technical progress of the work assignment through monthly status calls and telephone logs that document discussions between the RPM and ICAIR/Life Systems. In the interest of conserving technical review time, all RP documents may be sent by EPA directly to the ICAIR/Life Systems program manager without being sent first to the Donohue site manager. However, the resulting review comments on RP documents and other deliverables will be submitted by ICAIR/ Life Systems first to Donohue; Donohue will, in turn, forward them to the RPM.

2.5 Perform toxicity assessment. Identify reference doses and slope factors for each contaminant of potential concern. Develop tables describing adverse health effects. Include exposure toxicity summaries for chemicals contributing to risk.

2.6 Perform risk characterization. Review outputs of exposure and toxicity assessments. Calculate risk estimates for noncarcinogens and carcinogens using both current and future use scenarios. Prepare summary tables including explanation and interpretation of results.

2.7 Baseline Risk Assessment Report:

2.7.1 Prepare draft report summarizing results of Tasks 2.2 through 2.6. Document is assumed to be approximately 200 pages in length (single spaced, exclusive of work sheet printouts).

2.7.2 Attend review comment meeting with U.S. EPA to discuss the report. One ICAIR/Life Systems person is assumed at a one-day meeting in Cleveland, Ohio.

2.7.3 Revise and submit final report according to agreed-upon review comments. Submit a total of 11 copies of the report to U.S. EPA.

2.7.4 Incorporate into the final Human Health Evaluation Report, dated March 15, 1991, the comments provided by U.S. EPA on July 3, 1991 and submit a total of 11 copies of the revised report to U.S. EPA. Twenty (20) LOE has been budgeted for this task.

2.8 Management and administration activities during risk assessment phase.

Task 3.0 - Preliminary Ecological Assessment

3.1 Information Collection. Obtain additional site information from the USFWS, OEPA, ODNR, and the U.S. EPA.

3.2 Develop an ecological inventory for the site.

3.2.1 Perform a cursory literature review to establish regional terrestrial and aquatic ecological characteristics and to identify potentially sensitive and protected species indigenous to an area in the vicinity of the site. Retain plant and animal specialists to perform literature review and a site visit. Prepare an ecological inventory for the site according to U.S. EPA, Risk Assessment Guidance for Superfund, Volume II, Environmental Evaluation Manual.

3.3 Perform a contaminant analysis for the ecological assessment.

3.3.1 Review sampling results and draft RI chapters describing the results of the site characterization.

3.3.2 Review the results of monitoring data evaluation performed as part of the human health evaluation and select contaminated media and contaminants of concern for the ecological assessment. Include results of ERT sampling effort.

3.4 Perform an exposure assessment for ecological receptors.

3.4.1 Develop a site conceptual model describing ecological pathways.

3.4.2 Perform a qualitative contaminant fate and transport analysis. Review in-house references and summarize fate and transport characteristics of contaminants of concern. Perform site-specific fate and transport analyses based on information provided in draft RI chapters.

3.4.3 Suggest potentially complete exposure pathways, exposure points, and potentially exposed ecological populations.

3.4.4 Develop estimates of exposure levels (environmental media concentrations) for sensitive and protected ecological species.

3.5 Perform a toxicity assessment for ecological receptors.

3.5.1 Conduct a literature search and acquire references on the ecotoxicity (including sediment toxicity) of contaminants of concern.

3.5.2 Review references and prepare brief toxicity summaries (assume half-page each) for contaminants of concern. Identify critical toxicity values and bioassay results to characterize dose-response characteristics for relevant sensitive and protected species.

3.6 Identify state and federal ARARs and TBCs for sensitive and protected species indigenous to the site area.

3.7 Perform risk and impact evaluation.

3.7.1 Characterize current impacts on indigenous aquatic and terrestrial populations of sensitive and protected species.

3.7.2 Characterize potential future impacts to indigenous aquatic and terrestrial populations of sensitive and protected species.

5.2 Provide in-person technical support and advise at meetings with the EPA RPM, OEPA, the RP, and the community. Six one-day meetings are assumed (three in Columbus, Ohio, one in Hannibal, Ohio and two in Chicago).

Task 6.0 - Project Management

6.1 Extend the period of performance from June 1991 to March 1992. Prepare and submit 27 monthly progress reports (for the period of January 1990 through March 1992).

6.2 Provide cost and schedule control.

6.3 Coordinate with EPA on final invoicing and project closeout.

3.0 DELIVERABLES

The deliverables to be submitted to U.S. EPA under this work assignment are the:

- Work Plan and Contract Pricing Proposal (draft, final, Revision No. 1 and Revision No. 2)
- Baseline Risk Assessment - Human Health Evaluation (draft., final., and revised final)
- Baseline Risk Assessment - Environmental Evaluation (draft and final)
- Review Comment Report on the FS
- Review Comment Report on RP submittals (3)

4.0 SCHEDULE

The period of performance of this work assignment is estimated to be 27 months (from January 1990 through March 1992). Milestones established for this work assignment are listed in Table 3.

This schedule does not contain milestones for document reviews or meeting attendance (Task 5.2). Reviews will be completed 15 days after receipt of the RP document; meeting dates will be set by the U.S. EPA RPM on an as-required basis.

TABLE 1

OUTLINE FOR BASELINE RISK ASSESSMENT REPORT

X.X FRONT MATTER

- X.1 Title Page
- X.2 Forward
- X.3 Table of Contents
- X.4 List of Figures
- X.5 List of Tables
- X.6 List of Acronyms

0.0 EXECUTIVE SUMMARY

1.0 INTRODUCTION

- 1.1 Overview
- 1.2 Site Background
- 1.3 Scope of Assessment
- 1.4 Organization of Risk Assessment Report

2.0 IDENTIFICATION OF CHEMICALS OF POTENTIAL CONCERN

- 2.1 General Site-Specific Data Collection Considerations
- 2.2 General Site-Specific Data Evaluation Considerations
- 2.3 Chemicals of Potential Concern in Soils
- 2.4 Chemicals of Potential Concern in Groundwater
- 2.5 Chemicals of Potential Concern in Surface Water/Sediments
- 2.6 Chemicals of Potential Concern in Air
- 2.7 Summary of Chemicals of Potential Concern

3.0 EXPOSURE ASSESSMENT

- 3.1 Characterization of Exposure Setting
- 3.2 Identification of Exposure Pathways
- 3.3 Quantification of Exposure
- 3.4 Identification of Uncertainties
- 3.5 Summary of Exposure Assessment

4.0 TOXICITY ASSESSMENT

- 4.1 Toxicity Information for Non-carcinogenic Effects
- 4.2 Toxicity Information for Carcinogenic Effects
- 4.3 Chemicals for Which No EPA Toxicity Values are Available
- 4.4 Uncertainties Related to Toxicity Information
- 4.5 Summary of Toxicity Information

TABLE 2

OUTLINE FOR PRELIMINARY ECOLOGICAL ASSESSMENT REPORT

X.X FRONT MATTER

- X.1 Title Page
- X.2 Forward
- X.3 Table of Contents
- X.4 List of Figures
- X.5 List of Tables
- X.6 List of Acronyms

0.0 EXECUTIVE SUMMARY

1.0 INTRODUCTION

- 1.1 Objectives of the Ecological Assessment
- 1.2 Scope of the Ecological Assessment
- 1.3 Organization of This Report

2.0 SITE AND STUDY AREA DESCRIPTION

- 2.1 Physical Description of the Site/Study Area
- 2.2 Summary of Ecological Inventory

3.0 DESCRIPTION OF CONTAMINANTS OF CONCERN

- 3.1 Identification of Site Contaminants of Ecological Concern
- 3.2 Environmental Fate of Contaminants of Concern
- 3.3 Ecotoxicological Properties of Contaminants of Concern

4.0 CHARACTERIZATION OF EXPOSURE

- 4.1 Define Ecological Populations Likely to be Exposed
- 4.2 Identification of Possible Exposure Points
- 4.3 Identification of Possible Exposure Routes
- 4.4 Summary of Potentially Complete Exposure Pathways
- 4.5 Exposure Point Concentrations and Doses

5.0 CHARACTERIZATION OF RISK OR THREAT

- 5.1 Summary of Criteria Exceedances
- 5.2 Documentation of Possible and/or Actual Effects
- 5.3 Bioassay Results for Site Samples
- 5.4 Histopathological Evaluation

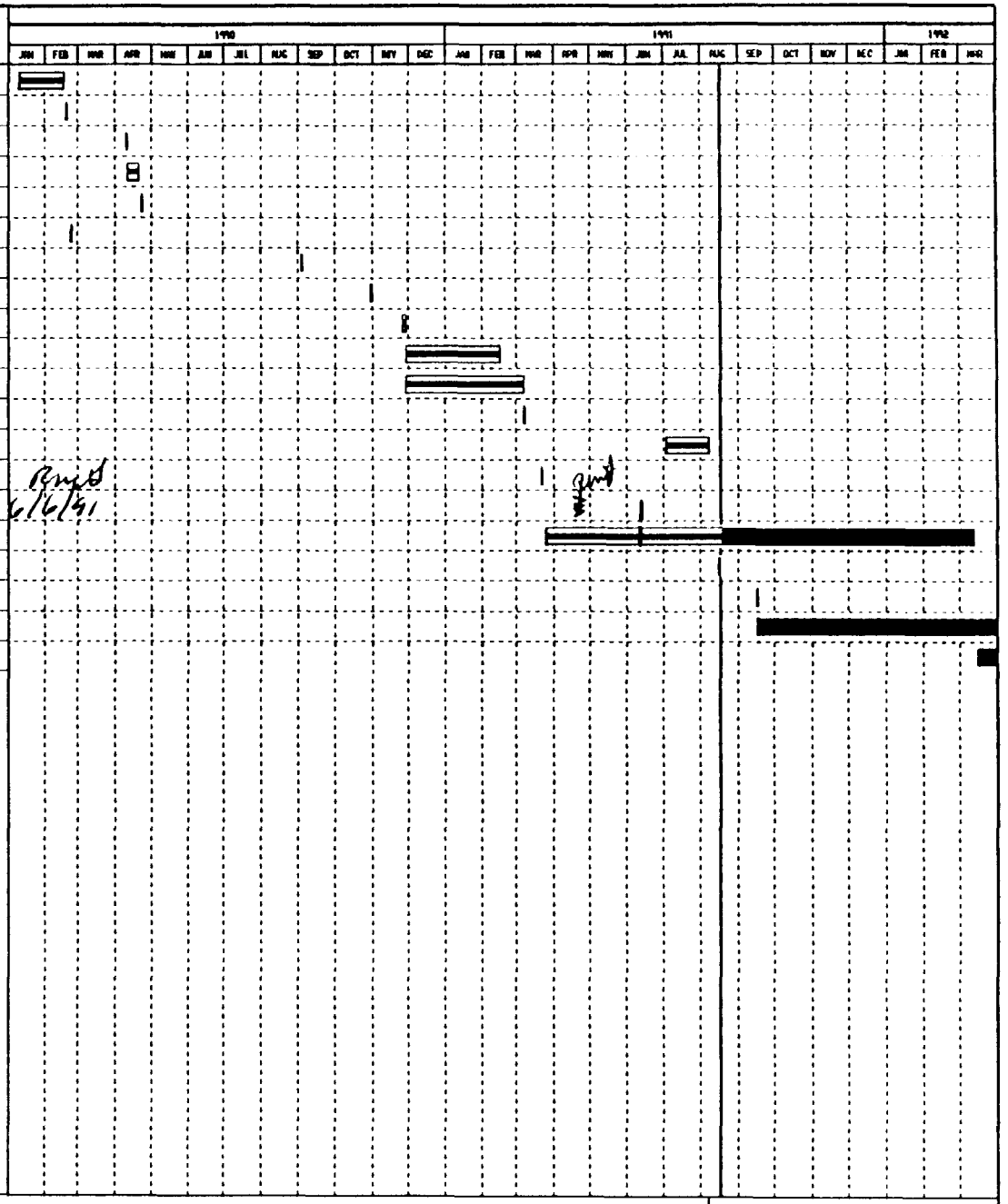
6.0 CONCLUSIONS, RECOMMENDATIONS AND LIMITATIONS OF THIS ASSESSMENT

7.0 REFERENCES

TABLE 3

PROJECT SCHEDULE

TASK	ACTIVITY DESCRIPTION	EARLY START	EARLY FINISH
1	WORK PLAN PREPARATION	10JAN90A	16FEB90A
2	SUBMIT DRAFT WORK PLAN	19FEB90A	19FEB90A
3	RECEIVE EPA COMMENTS	10APR90A	10APR90A
4	SUBMIT WORK PLAN	11APR90A	20APR90A
5	RECEIVE WORK PALN APPROVAL	23APR90A	23APR90A
6	RA SCOPING MEETING WITH PRP	22FEB90A	22FEB90A
7	RECEIVE SAMPLING DATA & DRAFT RI MATERIAL	4SEP90A	4SEP90A
8	DATA EVALUATION MEETING	31OCT90A	31OCT90A
9	CONDUCT SITE VISIT (ECOLOGICAL ASSESSMENT)	27NOV90A	28NOV90A
10	DRAFT HUMAN HEALTH EVALUATION	29NOV90A	15FEB91A
11	DRAFT ENVIRONMENTAL EVALUATION	29NOV90A	7MAR91A
12	REVIEW COMMENT MEETING	8MAR91A	8MAR91A
13	SUBMIT FINAL REPORTS	3JUL91A	7AUG91A
14	SUBMIT REVISED WORK PLAN REV 1	22MAR91A	22MAR91A
15	RECEIVE REVISED WORK PLAN APPROVAL 6/6/91	~~22APR91A~~	~~22APR91A~~
16	FS REPORT REVIEW	26MAR91A	13MAR92 *
17	SUBMIT REVISED WORK PLAN REV 2	16AUG91A	16AUG91A
18	RECEIVED REVISED WORK PLAN APPROVAL REV 2	16SEP91	16SEP91
19	PRE AND POST ROD TECH ASSISTANCE	16SEP91	31MAR92
20	PROJECT CLOSEOUT	16MAR92	31MAR92



* = Forcast Date. Actual Date Not Specified by EPA

Activity Bar/Early Dates
Critical Activity
Progress Bar

Primavera Systems, Inc 1984-1991

US EPA
WA 23-5L1Z ORMET CORPORATION
PROJECT SCHEDULE - 8/16/91

Sheet 1 of 1

Project Start : 1JAN90
Project Finish: 31MAR92

Data Date: 17AUG91
Plot Date: 19AUG91

Date	Revision	Checked	Approved

ATTACHMENT 1

RESUMES OF KEY STAFF

MANSOUR GHIASI, P.E.
Project Engineer
Environmental Services Division

EDUCATION:

M.S. - Civil Engineering - Geotechnical Engineering - University of Kentucky - 1985

B.S. - Civil Engineering - University of Kentucky - 1982

PROFESSIONAL REGISTRATION:

Professional Engineer -
Illinois, 1989

AREAS OF SPECIALTY:

Civil Engineering
Geotechnical Engineering
Solid Waste Management
Hazardous Waste Management
Remedial Design

EXPERIENCE:

Mr. Ghiasi has experience in various environmental and geotechnical engineering projects. He has performed investigation, analysis, and design of solid and hazardous waste and civil engineering projects. These projects include landfill design, remedial design, hazardous waste management facilities, and groundwater studies. He serves as geotechnical engineer/project engineer for the Environmental Services Division at Donohue's Chicago office. Some of his project experience includes:

* US Ecology Sheffield Site, Sheffield, Illinois. A corrective measures design is required for this hazardous waste facility which is regulated under RCRA and CERCLA. As a design engineer, Mr. Ghiasi participated in establishing a project strategy and defining the scope of the pre-design investigation. He prepared the Program Management Plan which outlines the general approach and defines the overall management strategy for implementing the corrective measures. He also provided technical support during the Field Sampling Plan preparation in the areas of groundwater and subsurface field investigation and geotechnical engineering

cost estimates were prepared for the removal and disposal of the tanks and contaminated soil. A study was also performed to investigate the presence of lead-based paint at the facility. Guidelines were recommended for the proper removal techniques and disposal of the lead-contaminated paint.

* Geomembrane Installation Certification. Mr. Ghiasi has served as a certification engineer on the following projects: Chain-of-Rocks Landfill, Granite City, Illinois (Cells 1 and 2); and Milam Landfill, St. Louis, Illinois. he made periodic field visits to verify that standard installation procedures were implemented and that proper documentation was generated. Mr. Ghiasi reviewed all installation and testing documents for accuracy and completeness and certified the final installation reports.

* Kettleman Hills, California. Mr. Ghiasi was responsible for the design and analysis of the Leachate Collection/Removal (LCR) system for a double-lined, hazardous waste landfill. He also analyzed the leachate removal riser pipes for structural stability and the primary ramp under dynamic loads. Mr. Ghiasi prepared construction specification for all aspects of the landfill according to the CSI format.

* Adams Center V, Fort Wayne, Indiana. Mr. Ghiasi analyzed hydraulic efficiency of the LCR system for a double-lined landfill. He also analyzed the landfill cover for slope stability against sliding and waste settlement. Mr. Ghiasi compiled the landfill design report for submittal to the regulatory agency.

* NIES, Wichita, Kansas. Mr. Ghiasi was involved in the design of an above-ground industrial landfill consisting of leak detection system and primary and secondary leachate collection systems. Each system was a composite unit of natural and synthetic materials. Mr. Ghiasi made use of the "Hydrological Evaluation of Landfill Performance" (HELP) computer model to estimate the water and leachate movement through and out of the landfill. He also evaluated the landfill for slope stability, bearing capacity, and settlement problems.

* NIES, Wichita, Kansas. As a resident engineer, Mr. Ghiasi was responsible for overseeing an industrial landfill construction. His responsibilities included:

  - verification of the key design element;
  - observation of the design related construction activities and interaction with the client and the construction quality assurance engineers;
  - approval of design changes when redesign of a certain disposal cell element became necessary.

PROFESSIONAL MEMBERSHIPS:

American Society of Civil Engineers, Geotechnical Division
Association of Groundwater Scientists and Engineers

PRESENTATIONS, PUBLICATIONS, AND AWARDS:

Presentations:

"The Use of Groundwater Tracer During Well Installation", presented at the First National Outdoor Action Conference on Aquifer Restoration, Groundwater Monitoring and Geophysical Methods, May 18-21, 1987, Las Vegas, Nevada.

Publications:

"Extraction of TCE-Contaminated Ground Water by Subsurface Drains and a Pumping Well", Ground Water Journal, Vol. 28, No. 1, January-February 1990.

EMPLOYMENT HISTORY:

1988 - Present	Donohue & Associates, Inc.
1985 - 1988	Woodward-Clyde Consultants
1984 - 1985	McCoy & McCoy Environmental Consultants

DQ5-050791

J. A. Duchene

BS in Biology/Chemistry, University of Dayton, 1968
Masters in Business Administration, John Carroll University, 1985

Joined Life Systems, April, 1984

As an environmental scientist, participates in risk assessment activities and oversight of remedial activities by responsible party contractors. Participates in sampling activities, exposure assessment and health effects evaluations. Serves as Program Manager/Task Manager on USEPA and other governmental contracts. Responsible for both technical and financial planning, implementation and tracking performance within these projects.

PROGRAM MANAGER

As ARCS Regional Program Manager (EPA Regions IV and V), is responsible for overall management of risk assessment activities at sites in Ohio, Indiana, Michigan, Illinois, Minnesota and Wisconsin. These site activities include risk assessment in all phases of site remediation and oversight of similar activities performed by a responsible party's contractor. Currently managing a technical team for remediation at:

- A well field in Indiana
- A contaminated lake in the Upper Peninsula of Michigan
- A universal joint manufacturing plant in Michigan
- A sludge lagoon at a manufacturing facility in Michigan
- A manufacturing facility in Michigan
- A defense plant in Ohio
- Lanfills in Minnesota and Indiana
- A metal plating facility in Michigan

Serves as Program Manager for a contract to perform water-quality risk assessments during the National Bioaccumulation Study. Manager of a technical support team evaluating fish tissue data from contaminated industrial and agricultural sites. Developed and upgraded toxicity fact sheets for analytes in the study.

TASK MANAGER

Managed two Work Assignments that conducted technical audits of quality control data at nineteen commercial land disposal sites. Supervised a technical team that analyzed laboratory control data and compared performance on both a site basis and an overall program basis. Within these two assignments procedures used were completely documented to comply with a QA Project Plan prepared prior to implementation.

Serves as the Task Manager for Risk Assessments at hazardous waste sites. These projects involve coordination with USEPA Technical Contacts on review of site and background data, assessment of the response of human

Served as Task Manager for a number of expert witness support assignments. Responsible for planning and implementing Work Assignments for providing technical support for both Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) and Resource Conservation and Recovery Act (RCRA) actions. Expert support was provided in the disciplines of process chemistry, drum recycling, geohydrology, sulfide chemistry, lab pack disposal and secondary smelting for sites including Miami Drum Services, Citizens Gas and Coke and McCook Lead Supply.

Task Manager for a Workshop on acid deposition monitoring for snowfall and snow pack. This assignment involved selection of a multidisciplinary group of 24 snow researchers and assigning them one of four critical aspects of monitoring acid deposition for snow (snowfall, snow pack, soil interface and melt water). Planned and organized the structure of the workshop to include discussion papers, workgroup sessions and plenary sessions. Was responsible for the compilation of a meeting summary report detailing specific recommendations regarding needed research in the four monitoring areas. The summary report prioritized each workgroup's recommendation into an overall framework for use by EPA's Office of Acid Deposition, Environmental Monitoring and Quality Assurance in developing a research plan.

Served as Task Manager on an assignment to provide a response to research recommendations contained in the "Joint Report of the Special Envoys on Acid Rain" by Drew Lewis and William Davis. Directed the review of draft material to respond to recommendations made in six specialized areas of research. The recommendations report include both descriptions of ongoing and proposed projects and budgetary summaries in a timeline format.

Managed a work assignment to provide assistance to the National Parks Service in organizing and implementing a workshop convened to discuss the critical performance threshold for damage to stone and other materials. The one-day meeting, held at the American Institute of Architects in Washington, DC, debated the topic from a number of perspectives. A transcript of the taped proceedings provided the documentation of the level at which the damages as effects of air pollutants result in remedial action.

Task Manager for a Workshop on Damage to Real Structures. This assignment involved planning and organizing a meeting for 30 participants to discuss methods for extending dose-response relationships for acidic deposition damage to real structures. Authored the workshop summary report that organized the meeting discussions into recommendations for further work in this area.

Managed a work assignment for EPA's EMSL-Las Vegas which developed a decision tree for evaluating biomarkers of exposure. In close association with a biomarker expert, drafted a straw man version of the model. Assembled a review panel to discuss the assumptions of the model and the decision rules governing each stage of the development of a biomarker of exposure as it moves toward use as a field tool.

MEETINGS AND ACCOMMODATIONS MANAGER

Meetings and Accommodation Manager for all ICAIR-organized conferences (1984-1987). Organized and implemented 25 different meetings ranging from Symposia to small peer review meetings. Primary duties within this function are to provide logistical support for meetings including: site selection, negotiations, meeting room setup, audiovisual equipment needs, graphics, meal functions, travel, accommodations, press releases, advertising, transcription and proceedings publication. A partial list of meetings implemented include: review meetings on lead, fluorosis, formaldehyde and radionuclides; a symposium on quantitative risk assessment; public meetings on research plans for nitrogen dioxide, incineration-at-sea and the habitability of the Love Canal Emergency Declaration Area; workshops on mutagenicity testing protocols, water reuse, biomarkers, material effects, the direct/delayed research plan and acid deposition monitoring of snowfall/snow pack.

Prior Experience

City of Mentor — August, 1981 to April, 1983
Mentor, OH

PURCHASING AGENT

Centralization of purchasing function for all City Departments. Responsible for procurement for all services and supplies for City. Responsible for planning, operating and capital budgets. Handled contract administration and formal bidding procedures.

City of Maple Heights — May, 1972 to August, 1981
Maple Heights, OH

PURCHASING AGENT

Responsible for purchasing all supplies and equipment for all City Departments. Also involved in contract administration and capital equipment program.

Ohio State University — January, 1969 to July, 1970
Columbus, OH

RESEARCH TECHNICIAN

Developed research techniques involved in maintaining microbiological cultures in relation to particulate material in Lake Erie. Other duties included work in electron microscopy, data analysis and water sampling/testing.

Professional Affiliations

Society of Environmental Toxicology and Chemistry

Duchene, J.A., "Hazardous Waste Ground-Water Task Force Facility Assessment Program, Program Analytical Quality Control Summary Report: Cases 11-19," Work Assignment Report, Subcontract No. TES EMI-LS, Contract No. 68-01-7037, TR-693-154; Life Systems, Inc., Cleveland, OH; August, 1986.

Kangas, M.J.; Friedman, P.; Tyburski, T.E. and Duchene, J.A., "Quality Assurance on the Groundwater Monitoring Task Force Facility Assessment Program - Symposium Paper," TR-964; Life Systems, Inc., Cleveland, OH; June, 1986.

Duchene, J.A., "Hazardous Waste Ground-Water Task Force Facility Assessment Program Laboratory Quality Control Data Evaluation Report," Work Assignment Reports (for different facilities), Subcontract No. TES EMI-LS, Contract No. 68-01-7037, TR-693-144, -149, -151, -152; Life Systems, Inc., Cleveland, OH; January - September 1986.

Kangas, M.J. and Duchene, J.A., "Office of Environmental Engineering and Technology 5-Year Research Plan," Work Assignment Report, Contract No. 68-02-4038, TR-576-110A; Life Systems, Inc., Cleveland, OH; September, 1985.

Pfister, R.M.; Frea, J.I.; Dugan, P.R.; Randles, C.I.; Zaebst, K.; Duchene, J.M.; McNair, T. and Kennedy R., "Chlorinated Hydrocarbon, Microparticulate Effects on Microorganisms Isolated from Lake Erie," Proc. 13th Conference, Great Lakes Research, 82-92; 1970.